EXHIBIT 1

1: Exp Neurol 1996 Jul;140(1):1-13 Related Articles, Books, LinkOut

IDENT

Xenotransplantation of porcine fetal ventral mesencephalon in a rat model of Parkinson's disease: functional recovery and graft morphology.

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Neurotransplantation of human fetal dopamine (DA) neurons is currently being investigated as a therapeutic modality for Parkinson's disease (PD). However, the practical limitations of human fetal transplantation indicate a need for alternative methodologies. Using the 6-hydroxydopamine rat model of PD, we transplanted dopaminergic neurons derived from Embryonic Day 27 porcine fetuses into the denervated striatum of cyclosporine-A (CyA)-treated or non-CyA-treated rats. Functional recovery was assessed by amphetamine-induced rotation, and graft survival and morphology were analyzed using neuronal and glial immunostaining as well as in situ hybridization with a porcine repeat element DNA probe. A significant, sustained reduction in amphetamine-induced rotational asymmetry was present in the CyA-treated rats whereas the non-CyA-treated rats showed a transient behavioral recovery. The degree of rotational recovery was highly correlated to the number of surviving transplanted porcine dopaminergic neurons. TH+ neuronal survival and graft volume were significantly greater in the CyA-treated group as compared to the non-CyA group. By donor-specific neuronal and glial immunostaining as well as donor-specific DNA labeling, we demonstrate that porcine fetal neuroblasts are able to survive in the adult brain of immunosuppressed rats, mediate functional recovery, and extensively reinnervate the host striatum. These findings suggest that porcine DA neurons may be a suitable alternative to the use of human fetal tissue in neurotransplantation for PD.

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